REMARKS

In this response to the Office Action dated June 30, 2009, Applicants have amended Claims 1, 3, 9, 11, 15, and 16. Support for these amendments can be found, for example, from page 56, lines 16-19 of the specification as originally filed. Therefore no new matter has been added in this response. Claims 1-18, 20-22, and 24-40 remain pending, of which Claims 1, 2, 15, 29, and 35 are presented for the Examiner's consideration. In view of the amendments and remarks as set forth herein, withdrawal of the claim rejections is respectfully requested.

Claim rejections under 35 U.S.C. 103

The Examiner rejected Claims 1, 2, 15, 29, and 35 under 35 U.S.C. 103(a) as allegedly being unpatentable over JP 2002-334618 A ("JP 618A"). However, for the reasons discussed below, Applicants respectfully submit that the cited reference fails to teach and suggest the rejected claims.

Surface of the fine metal particles

The current pending claims recite, among others, fine metal particles characterized in that the surface of the fine metal particles themselves is covered with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom. This feature is not taught and suggested in the reference.

JP 618A teaches a process for formation of conductive metal thin film using fine metal particle dispersion, which metal thin film is substitutionally used for a metal plating film. In the process disclosed in the reference, when the heat-treatment is carried out, the compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, which group is used as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles, is detached from the fine metal particles. Thus, at the step of heat-treatment of the process disclosed in JP 618A, all of the fine metal particles contained in the fine metal particle dispersion are converted to such fine metal particles, from whose surface the coating of the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom is totally removed. As a result, such fine metal particles having no coating thereon are quickly sintered with each other to form the sintered product made of the fine metal particles themselves.

Accordingly, JP 618A fails to provide any disclosure or suggestion that the heat-treatment employed in the process disclosed in the reference may produce fine metal particles in the form of

a dry powder, wherein the surface of the fine metal particles themselves is still covered with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom and capable of forming a coordinative bond via a lone pair of said atom as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles.

Coordinative bond between a compound and metal element

Claim 1 also recites, among others, that one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom and the group is used as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles. Claim 15 recites, among others, that carboxylic acids are capable of forming a metal salt with metal contained in the fine metal particles, which may be used to form the coating thereof on the surface of fine metal particle being dispersed in the fine metal particle dispersion. However, such features related to the coordinative bond or metal salt are not present and further taught away in the cited reference.

According to JP 618 A, the fine metal particle dispersion may comprise a compound having reactivity to a group containing a nitrogen atom, an oxygen atom or a sulfur atom, which group is used as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles in the one or more compounds having the group containing a nitrogen atom, an oxygen atom or a sulfur atom, with which compounds the fine metal particle being dispersed is coated. Such compound having reactivity to the group containing a nitrogen atom, an oxygen atom or a sulfur atom, however, is used to accelerate removal of the one or more compounds having the group containing a nitrogen atom, an oxygen atom or a sulfur atom from the surface of the fine metal particle when the heating-up treatment is carried out. Accordingly, the compound having reactivity to the group containing a nitrogen atom, an oxygen atom or a sulfur atom is by no means used for formation of the coating thereof on the surface of fine metal particle being dispersed in the fine metal particle dispersion. Therefore, JP 618 A fails to provide any disclosure or suggestion as to such the fine metal particle whose surface is coated with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, which group is used as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles.

Temperature of heat treatment

By the amendments herein, the current pending claims expressly disclose that the temperature of heat treatment is 100 °C or lower, which is important to prevent the coating of the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom from being removed while the dispersion medium is selectively removed from the fine metal particle dispersion. Regarding this feature, JP 618A fails to provide any disclosure and suggestion to such cited heat-treatment temperature range.

JP 618A describes that the one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, such as alkylamines, alkanethiol and alkanediol, must come off from the metal surface when the step of sintering or alloying by heat-treatment is carried out. Thus, the reference fails to teach such a selection of the temperature of 100 °C or lower for the heat-treatment step as in the present application, and moreover this claimed temperature range is quite opposite to the aim of the heat-treatment step for sintering or alloying of the process disclosed in the reference. Therefore, the cited reference fails to teach the feature related to the heat treatment temperature and moreover teach away such feature.

Content of a compound

Regarding a content of a compound, the presently claimed invention recites, among others, that a covering amount of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom is adjusted by selecting total of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom in the range of 5 to 35 parts by mass based on 100 parts by mass of the fine metal particles. This teaching of the content of the compound is absent in JP 618A.

The fine metal particle dispersion used in the process disclosed in the reference is such a dispersion comprising an organic solvent that is used as a dispersion medium and a fine metal particle having an average particle size selected in the range of 1 to 100 nm, which particle is dispersed in the organic solvent, wherein the surface of the fine metal particle being dispersed therein is coated with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, which group is used as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles (*See* Claim 1 of JP 618A). In the fine metal particle dispersion, the content of the organic solvent that is used as the dispersion

medium is preferably selected in the range of 5 to 100 parts by mass based on 100 parts by mass of the fine metal particle (*See* paragraph [0036] of JP 618A).

However, none of the foregoing teachings contains description as to the content of one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, which group is used as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles.

Regarding paragraph [0036] of the reference, the Examiner asserted that the content range of the compound as cited in the present application is taught or suggested. *See* page 3, lines 14-22 of the Office Action. However, as presented above, the reference clearly describes that the content of the compound having the group containing the nitrogen, oxygen, or sulfur atom should be determined based on the content of the fine metal particles, but fails to provide any suggestion such that the content is determined based on the content of said organic solvent. Paragraph [0036] of the reference merely mentioned that the content of the organic solvent is related to the quantity of carboxylic acid, but did not provide any disclosures teaching or suggesting the specific cited content ranges of the compound.

As such, Applicants respectfully submit that JP 618A further fails to disclose the feature of the subject applications in relation to the content of a compound.

Thickness of the covering layer

In addition to the foregoing, JP 618 A further fails to teach or suggest the cited feature related to the thickness of the covering layer in the subject application. The reference does not provide any disclosure as to the specific choice of the thickness of the covering layer formed with the adjusted covering amount such that "a thickness of the covering layer formed with the adjusted covering amount is at least 0.5 nm or thicker, and selected in the range of 2/10 to 8/10 of the average particle size of the fine metal particles". JP 618 A merely teaches fine metal particles in wet form being dispersed in a dispersion solvent, in which a thickness of the covering layer is by no means adjusted to such a well-adjusted thickness. Accordingly, JP 618 A is further deficient in the feature related to the thickness of the covering layer of the subject application.

Boiling point of polar solvent

The presently pending claims recite one or more polar solvents, which have a low boiling point of 80 °C or lower. Such polar solvent is capable of evaporated at a temperature of 100 °C or lower. These features are also missing in the cited reference.

JP 618A teaches such a preferable selection of dispersion medium; "it is preferable to select a nonpolar solvent or low polar solvent, rather than a high polar solvent in which the compound forming the coating layer on the surfaces of the fine metal particles, for example, such as an alkylamine, is so highly soluble that the coating layer on the surfaces of the fine metal particles may vanish away.", as described in paragraph [0034]. As such, selection of polar solvent for the dispersion medium as in the current claims would not be obvious in light of the preferable selection of dispersion medium described in paragraph [0034] of the reference.

Further, the reference teaches such a preferable selection of dispersion medium; "a nonpolar solvent or low polar solvent with a relatively high boiling point which hardly evaporates around room temperature, for example, such as terpineol, a mineral spirit, xylene, toluene, ethyl benzene and mesitylene, is preferably employed", as described in paragraph [0035]. In view of this teaching, selection of a polar solvent having a boiling point of 80 °C or lower for the dispersion medium would be clearly taught away.

Accordingly, JP 618A fails to teach use of a polar solvent having a boiling point of 80 °C or lower and further teaches away incorporating such features in the subject matter.

Carboxylic acid being a compound that covers fine metal particles

Claim 1 further recites, among others, fine metal particles, which are covered with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom. Claim 15 further specifies that the claimed compound can be carboxylic acids. JP 618A, however, fails to provide any disclosure or suggestion such carboxylic acid would be one of "compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom and capable of forming a coordinative bond via a lone pair of said atom as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles". In paragraphs [0029] to [0031] of JP 618A, the reference merely describes that the organic acid anhydride or derivative thereof or the organic acid is used as the compound having reactivity to the group containing a nitrogen atom, an oxygen atom or a sulfur atom, however, fails to disclose specific chemicals such as carboxylic acids. As such, JP 618A further fails to disclose or suggest the fine metal particles comprising carboxylic acids according to the present application.

In addition, the reference also fails to provide any disclosure or suggestion as to the specific choice of the one or more carboxylic acids forming the covering layer such that "said one or more carboxylic acids is selected from the group of consisting of long chain carboxylic acids

having 8 or more carbon atoms in the form of linear carboxylic acid, which carbon atoms are chosen in the range of 18 carbon atoms or less".

As such any features related to carboxylic acids according to the present application have not been taught or suggested in the cited reference. Therefore, in light of this deficiency of JP 618 A as well as the foregoing deficiencies, the claimed invention is not obvious.

Dry powder

The present invention cites, among others, fine metal particles in the form of a dry powder, which is also not present in the reference. JP 618 A teaches just a fine metal particle dispersion comprising fine metal particles that is coated with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, and thus the reference teaches just fine metal particles being dispersed in the organic solvent, which is considered to be fine metal particles in the wet form. Accordingly, the reference fails to provide any disclosure or suggestion as to such fine metal oxide particles in the form of a dry powder as disclosed in the pending claims. The reference further fails to disclose the feature of being dry powder in the presently claimed invention.

All pending claims are nonobvious over JP 618 A

As discussed above, JP 618 A fails to disclose and further teaches away several features of Claims1, 2, 15, 29, and 35. The Examiner has not pointed to other knowledge of those having ordinary skill in the art which would render the claimed invention having any of these features obvious. As such, the subject matter of the rejected Claims 1, 2, 15, 29, and 35 cannot be obvious in view of the reference. Accordingly, Applicants respectfully request withdrawal of rejections and reconsideration the claims.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicants reserve the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not

reasonably infer that Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

Co-Pending Applications of Assignee

Applicants wish to draw the Examiner's attention to the following co-pending applications of the present application's assignee.

Docket No.	Serial No.	Title	Filed
WAKAB81.002APC	10/556871	METHOD FOR FORMING FINE COPPER PARTICLE SINTERED PRODUCT TYPE OF ELECTRIC CONDUCTOR HAVING FINE SHAPE, AND PROCESS FOR FORMING COPPER FINE WIRING AND THIN COPPER FILM BY APPLYING SAID METHOD	15-Nov-2005
WAKAB81.004APC	11/571249	CONDUCTIVE METAL PASTE	18-Jan-2007
WAKAB81.005APC	11/994199	CONDUCTIVE CIRCUIT MANUFACTURING METHOD	28-Dec-2007

CONCLUSION

In the light of the applicants' amendments to the claims and the remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: September 30, 2009 By: /daniel altman/

Daniel E. Altman
Registration No. 34,115
Attorney of Record
Customer No. 20995
(949) 760-0404

7880292_1
093009